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August 1986

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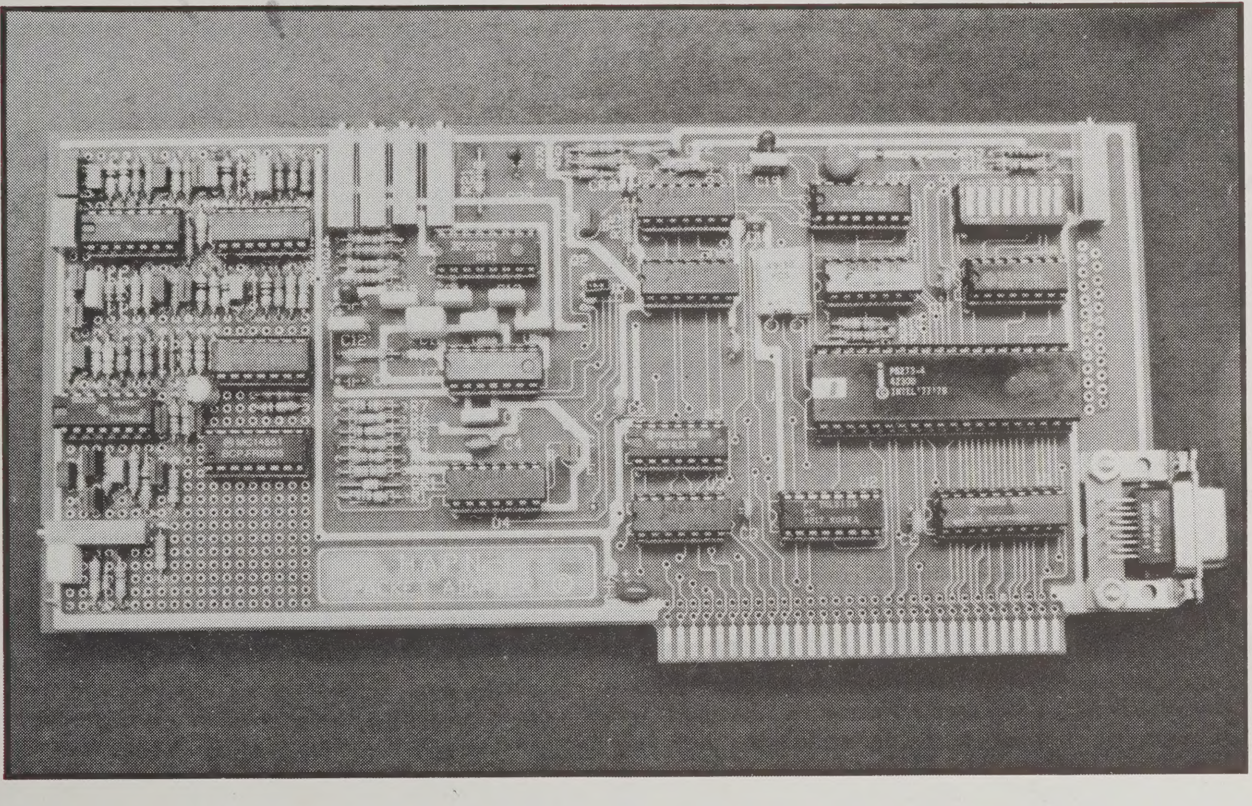
PACKET RADIO MAGAZINE

Dedicated to the Advancement of Packet Radio



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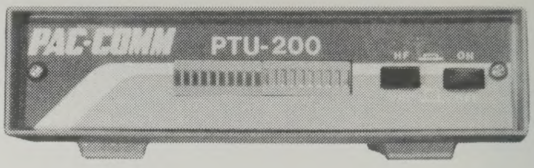

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PACKET RADIO MAGAZINE

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PPRS - Pacific Packet Radio Society
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UPRA - Utah Packet Radio Association

Articles and photographs are solicited dealing with any aspect of digital communications. Both technical and operational topics are desired including new product announcements and equipment reviews.

==

OUR COVER. The Hamilton Area Packet Network group's HAPN-1 TNC card with an experimental 4800 baud modem in the wirewrap area. See the bulletins updating HAPN activities in this issue of PRM.

NETWORK USE OF SIX METERS UNDER CONSIDERATION BY FCC

Brad Voss, KE8CW

The FCC is considering a proposal to permit digital network use of the 52-54 MHz portion of 6 meters, used by some amateurs.

The proposal , written by Donald Stoner, a computer user and amateur radio operator is scheduled for a preliminary ruling in November. According to the proposal, the digital network would give personal computer users an alternative to increasingly expensive phone networks. The proposal would establish a packet-switching public digital radio service (PDRS), which would operate on 6 meters. Voice transmissions would not be allowed in the same segment occupied by the PDRS.

This proposal is being watched closely by both amateurs and computer buffs alike. Computer users are excited about the proposal since the key advantage is that a radio based network would be less expensive to use because there would be no connect or phone charges. Equipment costs would also be comparatively cheaper and affordable not to mention ease of use.

The network would work similarly to our present packet operating protocol. Information to be sent to another computer would be placed in a packet which includes a destination address. Each user is considered to be a node in the PDRS and would constantly monitor packets, looking for packets addressed to them. If a message addressed to the node is detected it is saved in the recipient's mailbox. The passing of messages through multiple nodes to get to its final destination is again similar to the work currently being done in amateur packet networks.

The ARRL has sent comment to the FCC and has said that the 2 MHz Stoner wants is too much for operators to give up, and that a smaller bandwidth of several kilohertz would be sufficient for digital shortwave transmissions. Stoner has commented that the system would be quickly overwhelmed if given such a small bandwidth.

Unfortunately, this proposal may only be the tip of a growing iceberg. Its no secret that commercial pressure on our amateur bands has been increasing and will continue to do so. The main issue of the proposal is that the upper portion of 6 meters is under-utilized and could be put to better use. The success of this proposal will most likely be determined on the definition of under-use.

The FCC decides whether to issue a formal rule for public comment in November. Watch for further details in your favorite ham magazine or computer magazine; the proposal is being watched by many different interests.

-PRM-

CACTUS CORNER

Lyle Johnson, WA7GXD

This month we present an NNC update, a few additional thoughts on the KPC 2400 and more information on HF operations.

NNC

The first Alpha NNC was delivered in late June to KE7CZ followed the next week by shipments to most of the other "Alpha" software developers.

The first units are experimental in nature. No "real" software has been written for them, and the hardware, while suspected of working well, hasn't proven it yet! The modem boards were not included in the first shipments; there were layout problems and they will be following soon.

The NNC has been called "The silliest thing I ever heard of" by one packeteer; others keep asking when they can get one.

While most of you probably already know what the NNC is for, bear with me while I introduce it to any newcomers that may be reading this column.

The Network Node Controller is a sort of super TNC. It has up to four radio ports (compared to 1 for a standard TNC) and two serial user ports. It also supports parallel interfaces (Centronics compatible printer port and the Small Computer Systems Interface, or SCSI, bus). It includes 64k to 256k bytes of battery-backed RAM and 32k bytes to 256k bytes of other EPROM and/or RAM memory. It uses an HD64180 processor for Z80 compatibility. It is small, rugged and made almost entirely out of CMOS parts. It can be fastened to the side of a standard 5-1/4" floppy disk drive, and an optional floppy controller board turns it into a high-performance stand-alone development system for software.

By using a Z80-compatible processor, the wide range of Z80 development tools (languages like C, debuggers, etc.) and text editors (like WordStar) become available for it. In addition, software developed for the Xerox 820 may be easily converted to run on the NNC.

So why make another Z80 system when Xerox boards are around for $50?

The Xerox 820 is designed for an office, has lots of parts and limited memory. The NNC is much smaller, uses far less power, should be more tolerant of noise, easier to clean up for remote sites and should be much more reliable -- as well as much faster in operation.

Why not use an 8088?

The HD64180 represents similar processing power to the 8088, but at a higher level of integration. This means fewer parts, smaller boards, reduced cost and better reiliability.

Why not use a Taiwanese PClone motherboard?

For the same reasons that the Xerox 820 board is not recommended for remote use. Power drain, complexity and in the case of the PClones, card edge connectors.

Remember, the NNC is not intended to be your shack computer; it is intended to sit on mountaintops (in the West), Farmer John's corn silo (Midwest), TV channel X's tower (East) or ??? You get the idea.

Hopefully, there will be some serious packet application software (networking, including AX. 25 Level Three switches and datagram TCP/IP switches) running on the NNCs in a few months and Beta test can begin.

Stay tuned!

2400 BIT PER SECOND PACKETING

The Kantronics KPC2400 hasn't yet arrived at TAPR (our KPC1 was traded up, and the new unit is expected "any day now").

However, the discussion last month left some folks with a somewhat negative impression of the unit and I want to clarify things a bit (clarify is defined as "muddy the waters further").

The example given last month assumed keyboard QSOing on a lightly loaded channel. I concluded that a 2400 baud modem with today's radios would net you about 33% more throughput.

On a heavily loaded channel, that number might go down. On a lightly loaded channel, it would probably go up several percent.

Let's look at another possibility.

Suppose we want to do a file transfer to another station that is in direct connect range with very good signals. Assume retries are nil and we are using typical radios. Using the numbers from last month for radios and delay time, but setting MAXFRAME to 7, PACLEN to 128 and DWAIT to 0, we would see something like this.

		1200 bps	2400 bps
DWAIT	mSec	0	0
TXD	mSec	300	300
PACKET	mSec	6100	3050
deadtime	mSec	200-500	200-500
DWAIT	mSec	0	0
TXD	mSec	300	300
ACK	mSec	130	65
Total		7030-7330	3915-4215

In this case, the 2400 bps unit is 1.7 to 1.8 times as fast as the standard 1200 bps operation. This is very close to the theorectical maximum of 100% improvement.

In summary, then, the 2400 baud modem may provide as much as 80% improvement in throughput in certain circumstances and probably somewhere between 20% and 40% under more typical circumstances.

As with any benchmark, all of this should be taken with a large grain of salt.

HF OPERATIONS

Some recent inquiries via the TAPR mailbox have expressed confusion about HF packet operating frequencies. Allow me to take this opportunity to help clear up (cause ?) some misunderstanding.

First off, if you are used to RTTY conventions, forget them! Packet is a different method of communication. Mark and/or space frequencies aren't particularly meaningful since packet presently uses NRZI (non return to zero - inverting) encoding as opposed to RTTY's use of NRZ (non return to zero) encoding. Thus, while mark and space frequencies have meaning for RTTY (and other NRZ encoding schemes), packet only concerns itself with transitions between frequencies.

Suppose you hear that HF packet operation is on 14.105 MHz. What does 14.105 MHz mean?

It isn't the mark or space frequency, it is the suppressed carrier frequency of your LSB transmitter ASSUMING YOU ARE USING TAPR STANDARD TONES FOR YOUR MODEM.

Accordingly, if I use a TAPR TNC 2 and a Kenwood TS430S in my HF packet operation, I simply set the Kenwood display to 14.105.00 MHz and, if my HF transceiver is properly calibrated (don't count on it unless you have verifed it recently), I should be able to copy packet signals.

Alas, if I am using a Kantronics or Packeterm IPT or AEA PK 64, this won't cut it.

Why not?

The TAPR recommended modem tones for 200 Hz shift 300 baud operation are 1600 Hz and 1800 Hz. The "decision point" or average frequency is 1700 Hz. At 14.105.00, my signal is centered on 14.103.30 MHz.

If I am using a Kantronics TNC, 1070 Hz and 1270 Hz (Bell 103 originate) tones are used so its signals will be centered 1170 Hz below the dial setting, or at 14.103.83 MHz. This is 530 Hz higher than the TAPR unit and no communication is likely!

Hence, if you use a Kantronics TNC on HF, set your dial 530 Hz lower than the "normal" frequency.

The AEA PK-64 and PK-232 use a tone pair of 2110 Hz and 2310 Hz. This yields a center frequency of 2210 Hz and resulting in a signal centered at 14.102.79 Hz, or 510 Hz low. Like the Kantronics case, we won't communicate (and an AEA to Kantronics attempt will fare even worse, with an error of 1.04 kHz!).

If you use an AEA PK64 or PK232, you should set your dial 510 Hz above the "normal" frequency.

To summarize, then, the packet frequencies published for HF indicate the suppressed carrier frequency of an LSB transmitter being fed TAPR-standard audio tones. AEA PK64 and PK232 users should set their dial 510 Hz higher and Kantronics and Packeterm users should set their dials 530 Hz lower.

Here is a tabular example:

TAPR	AEA	Kantronics
14.105.00	14.105.51	14.104.47
7.093.00	7.093.51	7.092.47

Of course, the surest way is to preset your dial, then use a tuning indicator, like the TAPR tuning indicator kit for XR2211-based modems, or the built-in AEA tuning indicator for the PK64 and PK232. For AMD 7910 "World Chip" modems, an external device independent of the modem itself is necessary.

Happy Packeting!

- PRM -

MAIL

Date: 15-Aug-86 06:18 EDT
From: Mitch Wolfson / DJ0QN [73167,3137]
Subj: Ontyme Proposal

I received the July PRM, and I appreciate you running the Ontyme proposal. I have till now had very low response, I think partly to do with the way I had hastily worded my original proposal. I meant to imply that anyone interested in participating in the project at all as a user, especially to take advantage of the free month, should contact me ASAP. Of course, I need SYSOPs as well, but I can't go ahead with this if I can't find any users.

I have delayed the project another month, so there is still some time. If I am unable to muster up some significant interest by the September time frame, I will drop the project entirely.

Thanks again. 73, Mitch Wolfson DJ0QN

RETRIES

PRM would like to properly credit the authors of the article on page 8 of the July issue, entitled Packet Beeper for TNC-1 Clone. The design and article were by Jeff King, WB8WKA, and Ron Petra, WA8OOH. We regret that their names were not included along with the article.

The article on page 6 of the July issue, TNC-2 Dual Port Digipeater was not submitted to PRM as an article, but was derived from literature handed out by project personnel. A newer version of the design should be available by the time you read this and an article on the new board has been promised for an upcoming issue.

- PRM -

PACKET AND THE ATARI ST

Chuck Harrington, WA4GPF

In last month's ST article, I gave a brief introduction to the ST's first packet terminal program, PACK-ET-TERM 3.0.; this month we will look a little closer at the program's features.

One of the nice things about an ST with a color monitor is that the user may select the colors that he wishes to display on the screen; this is easily done before executing PACK-ET-TERM. Would you like a black screen with text displayed in green and connect messages in red? Or how about a white screen with black text and connect messages displayed in brown? No problem; just use the Control Panel Desk Accessory to select the colors and background you prefer and save your preferences for future use. When you run PACK-ET-TERM, the program will use the colors you have selected.

PACK-ET-TERM features a triple split screen display, with the transmit and receive screens divided, and connect status and time displayed. The current status of the various buffers and other program features is also displayed on the screen, to remind the user of what the software is currently doing. Like other split screen programs, characters entered from the keyboard will appear in the transmit portion of the screen, and received text or messages from the TNC are printed to the receive screen. The remaining third of the split screen is the top line, where the Connect Messages and time of day are displayed. A typical connect message from a TNC-2 might appear as:

```
*** CONNECTED to WA4GPF via K4AHO at 12:05
```

As this message is printed to the top line, the ST's bell rings alerting the operator to the fact that a connection has taken place. A connection may also trigger other program features if desired. A "Print if connected" feature is a great way to save only your connects to a printer. When this feature is enabled, received text is sent to the printer only when you are connected! This is useful as a mailbox, or as a handy way to create a record of your packet connections. The "Connect Buffer" feature is similar, allowing a buffer to automatically open when you become connected, thus saving your connects to memory for later reading or storage to disk. A "Connect Message" feature will automatically send a message upon connection; even with a TNC-1; users of TNCs that already support connect messages will of course now have two different connect messages available.

PACK-ET-TERM provides time stamps for TNCs that do not support time stamping, so your connects may be further documentated with the time stamping at the beginning of each line. Time stamps are great when you are monitoring packet channel activity. You may open a 196K byte Receive Buffer, where each line sent to the receive screen is saved with a time stamp; you can capture hours of packet activity this way! I often use feature at night when I am sleeping, allowing me to see in the morning, everything that came over 145.01 all night long!

PACK-ET-TERM 3.0 also has a new "CQ feature". A short message which is held in a special CQ Buffer will be sent after 1 to 9 minutes of channel inactivity. It differs from the beacon mode, in that your CQ message is sent to whatever your UNPROTO is set to. Example:

```
WA4GPF>CQ <>CQ Packet Radio <>connect Via ORL....K
```

New CQ messages may be quickly loaded from disk to reflect your current digi routing or other needs. The "AutoCQ" will stop as soon as someone connects with you (unlike the beacon) and resume after the disconnection occurs.

Well, thats about it for this month. I am writing this the day before leaving for the Jacksonville hamfest where hopefully a lot of PRM readers get to see the debut of PACK-ET-TERM 3.0 and the ST in the packet booth. In the coming months I would like to use this column as a question and answer forum for the ST computer and PACK-ET-TERM 3.0. Should any of you have any questions, you may forward them to me at ORL. I will also try and bring you current news of the ST, and other ST software and products that may be of interest to packet enthusiasts.

Next month, a report on the packet exhibit at Jacksonville, and of course more on PACK-ET-TERM and the ST. Until then, Happy packeting!

- PRM -

IS THE APPLE MACINTOSH ROTTING AWAY?

An editorial by Bill Newkirk, WB9IVR

According to articles in PC Week Magazine, Apple Computer is due to introduce a DOS compatible Mac. This machine will be similar to the "kluged" CP/M Apple][computer where it will be a co-processored machine. Data conversion utilities supplied for going to/from the Mac data format from DOS format. This is supposed to be an improvement over the third-party MacCharlie box now sold.

The machine could also be closer to the Xerox 6085 type computer (runs ViewPoint and MS-DOS).

In either case, the MacFanatics I know start crying "Say It Ain't So" after they've read the article. (MS-DOS is a curse word to them.)

This would lead one to believe that Sculley is trying to get the Apple Computer Corporation out of its 1 product status. An irony to this is a remark Steve Jobs made in a Playboy interview where he said "(IBM) absolutely wants it all", and at the same time was introducing a closed-architecture computer.

So, did Apple make the same mistake Sony made with the Beta video tape system? That is, not working out industry standards and going it alone. You sure didn't see Sony make that mistake again on Compact Discs and 8 millimeter video tape. Can Sculley pull a rabbit out of his hat? We'll know more next year.

- PRM -

AN UPDATE ON THE CONNECTIONLESS EMERGENCY TRAFFIC SYSTEM

Bob Bruninga, WB4APR

This article updates/corrects the July 1986 PRM article about the Connectionless Emergency Traffic System (CETS) and summarizes the lessons learned on the use of CETS during the July 26, 1986 National Disaster Medical Exercise held in the Washington, DC area. Further details of the exercise will be published in the next AMRAD newsletter.

CETS PROGRAM

To the operator, A CETS station looks just like a WORLI type packet BBS system and uses all of the familiar commands for sending, reading, listing messages and downloading files. The major difference is in the absence of a discrete auto-forwarding sequence and in its place, a continuous background exchange of message lines which is transparent to the user in near real time.

The actual protocol we used is based on a 6 digit hour/minute/second serial number, a message type identifier, a routing path identifier, and a packet type identifier as follows:

```
BWIAPT>DC.GEN112643T1:Subject line etc.
BWIAPT>DC.GEN:112644T1/Continuation line of text
DC.GEN>BWIAPT:112643T1!         ACK
                            Text of subj. or mesg.
                            Line term. character
                            ID character
                            Path indicator digit
                            Type character
                            Time group
                            TNC monitor format with
   6 digit from and to calls
```

Three additional bytes are added to the six digit time stamp. One byte indicates the type of message. This is a space or an optional character, not a function of system software that is assigned by the originator of a message to make selective listing of the various message types possible. The second byte indicates the repeater path used so that ACK packets will use the correct return path. The third byte identifies the packet as either a subject line, a continuation line, or an ACK. A colon identifies a subject line, a slash identifies a continuation line, and an exclamation point indicates an ACK. A single quote mark indicates the end of a line. It is used to verify a complete line has been received and not accidentally truncated due to buffer overflow.

NDMS EXERCISE

With as many as 50 area hospitals participating in the NDMS exercise, the communications network was organized as 8 CETS hub stations which would receive the traffic from the disaster site and then relay by voice to the individual hospitals. During the exercise, 58 patient transport notifications (PTNs) were transmitted through the CETS network. These PTNs provided detailed tag numbers, bed codes, and injury codes for 119 patients and head counts for and additional 187.

SUMMARY

The CETS software performed to expectations even under adverse conditions. Unfortunately, however, a last minute decision by the PG County disaster personnel to pass all PTN traffic by voice first prior to handing the data over to the CETS system gave the remote users a skewed impression. Since all PTNs were passed by voice first, the data was 10 to 15 minutes stale by the time it arrived at the CETS van. CETS data entry proceeded at the projected rate of one PTN per minute and although the data was delivered through the CETS network in a nominal 5 minutes, the fact that it arrived 15 to 20 minutes after the voice report gave the receivers of the data a poor impression. For this reason, complexity of hauling a computer, TNC, radio, disk drives, CRT, printer and UPS power source into the field should be evaluated on a case by case basis. If the data to be transmitted is really short, voice ops may be the simpler choice. When long messages of record type content are desired, a normal AX.25 point to point net should be used. The CETS system was designed for the specific application of many short messages needed to be transmitted among many different stations in near real time. It can best be described as a multi-user, distributed WORLI BBS system with full-time access for all users and no auto-forwarding modes or lengthy delays.

CONCLUSIONS

I clearly believe that some form of CETS protocol is a necessity in this form of emergency exercise traffic handling situation. This implementation on the C-64 having to use the monitor/unproto mode of existing TNCs, however, is cumbersome at best. The proposed CETS protocol, though, does have merit in the existing environment of TNCs and the absence of a network layer protocol.

The program is experimental and should be considered as an interim solution to the network dilemma. Copies of the program are available for a $5.00 contribution and a formatted disk, but should only be requested by good BASIC programmers interested in evaluating such a system. The program includes a significant simulator to demonstrate program operation in a seven station CETS network.

-PRM-

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- PRM -

Kantronics Introduces

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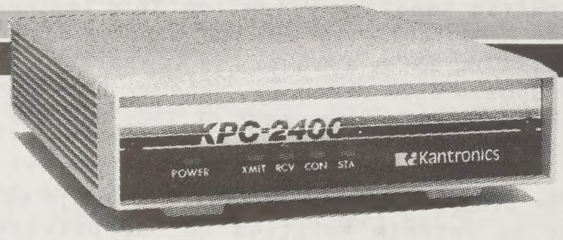
WHY 2400 BAUD?

Packet channels are congested, and faster is better. So Kantronics has designed a 2400 baud PSK (phase shift keying) modem and included it in an all new KPC-2400. In addition, we are making this modem available in PC-board form to add to your TNC-1 or TNC-2, cables included! If you have a KPC-1 or KPC-2, we'll take it in trade for a new KPC-2400.

Since October 28, 1982, the rules have allowed for baud rates up to 19.6K. Of course, we've all been operating at 1200 baud with Bell 202 (1200 baud) standard tones. However, the bandwidth of our radios is fully capable of running up to 2400 baud, giving us congestion relief. Our phase shift modem (PSK) takes advantage of the bandwidth available and the reasonable linearity of the audio channels, and it is designed with the V.26TER CCITT specification in mind. To add to your TNC or trade for a new KPC-2400, see facing page.



KPC-2400

All the Features of KPC-2 Plus 2400 Baud

KPC-2400 Features

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- Supports multiple connects
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- In-house service representatives
- Periodic updates
  —we keep you on the air

When we set out to design the KPC-2400 ™, we wanted it to be compatible with existing units, and it is. The KPC-2400 features both the KPC-2 modem for 300 baud HF and 1200 baud VHF work, and a new phase shift keying (PSK) modem for 2400 baud operation. All modes are software selectable with HBAUD command!

In addition, we've retained the RS-232/TTL jumper for easy direct interface to PC compatibles or the VIC/C-64 series. Hence, with the KPC-2400 you get HF, VHF, and 2400 baud packet with all computers that have a serial port, all in one!

The KPC-2400 of course, retains the version 2 software with multiple connects, and we've included an onboard memory diagnostic routine too.

Suggested Retail $329.00

Speed Up Your TNC-1 Or TNC-2 To 2400 BAUD*

Speed up your local area network with the new *2400 TNC Modem™*. The 2400 TNC Modem is a PC-board that mounts directly above your existing TNC PC-board. By adding the 2400 TNC Modem to TNC-1 or 2, you gain 2400 baud while retaining 1200 baud operation, switch selectable.

Two 2400 TNC Modems will be available—one for TNC-1's, and another for TNC-2's. If you purchased a TNC-1 or TNC-2, manufactured or kit version, the 2400 TNC Modem should be compatible. If you have a home brew case, the installation may require case modification.

The 2400 TNC Modem will be available in late June. You may order the 2400 TNC Modem through a Kantronics dealer or directly through Kantronics, using check, money order, Visa or Mastercard. *Suggested Retail $149.00 (includes shipping)*.

Trade In Your KPC-1 Or KPC-2 For a New KPC-2400

That's right—Now you can trade in your Packet Communicator (KPC-1), or KPC-2, and for just $149.00, you'll receive a NEW KPC-2400!

It's easy. All you have to do is fill out the KPC-2400 *EXCHANGE SCHEDULING FORM*, and mail it to Kantronics with check, money order, Visa or MC number. You'll be scheduled for exchange and notified by mail when to return your KPC-1 or KPC-2 to Kantronics. Once we receive your unit, a new KPC-2400 will be shipped directly to you.

You may also schedule your exchange by calling the Kantronics order desk and giving your Visa or MC number. Just call (913)842-7745 between 9-12, 1-4 (Central Standard Time) Monday-Friday, and we'll take it from there.

To guarantee a quick turn-around time, Kantronics is *scheduling ALL exchanges*, and assigning authorization numbers. Any unit returned to the factory without prior scheduling and authorization number will not be given priority placement.

KPC-2400
EXCHANGE SCHEDULING FORM

To schedule your KPC-2400 exchange, please fill out the information below and mail this form, including $149.00 payment (shipping included) to **Kantronics, 1202 E. 23rd Street. Lawrence, KS 66046.** You will be notified by mail of your authorization number, and scheduled exchange date. **DO NOT RETURN YOUR UNIT WITH THIS FORM.** This form is being used to SCHEDULE returns.

When it is time to return your unit, please DO NOT SEND BACK ANY CONNECTORS, CABLES OR POWER SUPPLIES. Send back only the unit itself. Any cables, connectors, or power supplies received will not be returned. You will receive a new manual and a 9-pin connector with your new KPC-2400.

Name ____________________ Call Sign ____________
Address ____________________
City ____________ State ______ Zip ____________
Phone( ) ____________ Date ____________
Unit to be exchanged (check one) ______KPC-1 ______KPC-2
Serial Number ____________________
Payment (check one) ______Check or Money Order
______VISA
______Master Card
VISA or Master Card Number ____________________
Exp. Date ____________________

Any unit returned to the factory without payment, authorization number and prior scheduling will not receive priority placement.

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* KPC-2400 operates with a 2400 bits-per-second (BPS) data rate in the 2400 mode. The signal rate of 2400 BPS is derived from a DIBIT data stream operating at 1200 baud. Therefore, the 2400 mode may be used above 28 MHZ.

Kantronics
RF Data Communications Specialists
1202 E. 23 Street Lawrence, Kansas 66046 (913) 842-7745

FREQUENCY AGILE C-64 BBS

Bob Bruninga, WB4APR
59 Southgate Ave
Annapolis, MD 21401

In the July 86 issue of PRM, Joe Burnham described my C-64 BBS program and gave a good accounting of its features and limitations. He mentioned the Cellular concept of small message systems serving a LAN and being linked to each other and other WORLI type BBSs for network connectivity. He did, however, omit the most important feature of the C-64 software in supporting such a concept, frequency agility.

My C-64 BBS software can not only support dual ports just like the WORLI Big Brothers, but more importantly, it provides two TTL output bits on the user port for frequency control of the link radio. The dual port capability with two separate radios and TNCs is only needed when the radios are on different bands with different channel baud rates such as HF and VHF. For multiple channel operations on the same band, only one TNC and radio is required, as long as the software can have control of the radio frequency.

The two frequency control bits can provide four combinations of frequencies under the control of the entries in the FWD.TNC table. This allows the most important feature of the LAN BBS software. It can exist autonomously on its own isolated frequency serving its local community of users. Whenever a message is posted indicating further routing, the BBS switches frequency according to the FWD.TNC file and forwards into the next BBS either direct or through a digipeater on that BBS's home frequency. Immediately after completing the forwarding operation, it returns to its home frequency to be available to its own users again. In this way, each BBS can be on its own frequency and still have connectivity to all the others. How does this work with non-agile BBSs such as the WORLI ones? Simple. A time window can be specified to force the C-64 BBS to go camp on the backbone channel or channel of a neighbor WORLI BBS such as between 0230 and 0530 in the morning for it to be available to receive incoming traffic from the non-agile BBS.

It is this frequency agility that makes the LAN concept work. If all of the BBSs have to be on the same frequency in order to have connectivity, then one user on one BBS can QRM all of the others and no advantage is gained by having many smaller BBS LANS.

One other feature recently added to the C-64 BBS software is a bulletin list download capability. To help support the LAN concept and keep local users off of the main WORLI BBS frequencies where possible, the C-64 will call up its neighbor WORLI BBS once a day probably about six o'clock in the morning and do an "LB" command. The resulting Bulletins List will be stored in the C-64 BBS system as a single message, available for users of the LAN. This way, they don't have to compete with the other hundreds of users on the main WORLI BBS frequency just to see if there are any new bulletins of interest. If they do see something they like, then, they can stand in line and at least know what they are after when they finally do get a chance to connect. To avoid unnecessary waste of space, the Bulletins List is truncated to the last 21 listings only.

The C-64 Frequency Agile BBS program was not designed to replace or compete with the much more capable WORLI systems, but to augment their capabilities and make the delivery of mail to local users more effecient for the WORLI system. It accomplishes this through operation on a separate frequency from the main BBS channel while still maintaining connectivity. Local users may enter their messages locally at keyboard speeds tying up the C-64 BBS as long as they want and as soon as they logoff, the C-64 QSY's to pass the traffic along at machine speeds. (It does not forward at a given time every hour, but immediately and every 50 minutes thereafter.) Finally, it gives the WORLI BBS a place to dump traffic for local users so that each one of them doesn't have to log on to the main channel and go through the lengthy process of checking their mail. They can do this on the C-64 BBS LAN frequency.

The software is available at my address above, but please send a FORMATTED disk along with a $5 contribution to make all this program copying worthwhile. Thanks.

- PRM -

HAMILTON AREA PACKET NETWORK NOTES

The following bulletins from John, VE3DVV, describe the Hamilton Area Packet Network's (HAPN) recent activities.

HAPN bulletin #1 14-jun-86

At present the HAPN is running tests with 4800 baud on 145.65 MHz. There are two repeaters on this frequency, a 1200 and a 4800 baud repeater. The repeaters will echo any 1200 or 4800 packets, but the beacons being transmitted every 5 min are in V1 (1200) and V2 (4800). The 1200 baud repeater is in Erin Mills and the 4800 machine at my place in Mount Hope. By listening you can tell the difference between packets.

The 4800 baud modem here is wired up on the HAPN-1 adapter card on the prototyping area on the board. For 4800 we tested the modem on a number of rigs and they all seem to work ok. The 4800 baud repeater uses an IC22s and my HAPN-1 uses an Icom IC27a. The initial test results with file transfers are very good.

HAPN bulletin #2 23-jun-86

At present the HAPN is running tests with 4800 baud on 145.65. We are considering making the modem available for TNCs other than HAPN or VADCG. We anticepate designing a circuit board for the most common TNCs around. Since we don't have much experience with interfacing to the commercial TNCs we are looking for technical information, such as circuit diagrams, specifications on the radio interface, and which TNCs have been succesfully tested on other than 1200 baud. Also some TNCs are using external clocking. What kind of clocking is required? What are the interfaces levels TTL/RS232 ? We like to hear from fellows who have experience in this field.

HAPN bulletin #3 13-Jul-86

HAPN demonstrated a 4800 baud QSO at the Ontario fleamarket in Milton on 12-Jul-86. The rig was IC27a running 25 watts into a mag-mount antenna on the hood of a car. The TNC was an HAPN-1 adapter with a 4800 baud modem added on the prototype area (see picture on cover of PRM).

The remote station was VE3DNM in Hamilton running a Kenwood 7930 at 5 watts. The signals were marginal due to the poor location, escarpement, wx etc. The first LED on IC27a was repeatedly going out indicating a signal strength around S1 to S2 (first LED).

Despite the poor signal we managed to transfer an 138K binary file from the test site in Hamilton. The file transfer was successful. The file contained an high resolution satellite picture showing Baffin Island (NE Canada). The picture contained the visible as well as infrared image and was displayed on a Robot 1200 like SSTV scanconverter in RGB. The picture had been received by Glen VE3DNL from NOAA-7 using home brew equipment. The picture was translated to a color SSTV format suitable for display on a SSTV scan converter and forwarded on packet. Glen used an Imsai Z80 system with an VADCG TNC for packet radio. The picture contained all original data and did not suffer from degradation as is common by analog transmission means.

By the way, the packet protocol used was AX25, but we feel V2 would have been better under the marginal conditions.

HAPN bulletin #4 10-aug-86

The response to our article describing the HAPN-1 adapter board in the August issue of HAM RADIO is great. It showed a picture of a prototype on the front cover. We suggest that anyone interested in the technical details have a look at the article.

The artwork on the 4800 baud modem beta boards is now completed and and initial run of 20 boards is being made. These boards are designed for the VADCG TNC (or others) with an RS232 interface. The beta test sites will also test the boards on other TNCs like TAPR by bypassing the RS232 chips. The modem features an on board DCD circuit that switches in abt 10-15 MS. The modem interfaces directly to the modulator and demodulator in the 2 m radio. The normal squelch and volume control on the radio are not used for packet. This modification has been tried on a number of radios and turned out to be quite easy. Due to the higher baudrate and fast modem squelch operation file transfers go almost 4 times faster.

We intend to utilize our 2 m channels more efficiently on the local network without the expense of having to buy another radio. This way we can make packet more enjoyable like we once did with voice on the low bands when we switched from AM to SSB.

- PRM -

KANTRONICS TNC MODS TO IMPROVE PACKET COPY

The following message from John, WD4OQC, in the Knoxville, Tennessee area has appeared on many MailBoxes and might be of interest to those who are using Kantronics KPC TNCs.

Via K4EID: 4393 From WD4OQC KANTRONICS TNC FIX

A problem has been found in the Kantronics KPC TNC, all versions. The Push-to-Talk circuit has a fault in its design that results in intereference to some rigs. Rigs affected will be those which use a "leaky audio" line for keying, such as the ICOM HTs or any rig with a fast, solid state T-R switch.

The problem arises from the interface between the 6803 microporcessor and the PTT circuit in the TNC. The PTT pin on the radio connector is driven from a 6803 port bit by a cascode transistor combination Q3 & Q2. This combination presents the microcomputer with a hi impedance load which is the source of the problem.

The port used is a bit-addressable port. this means that the TNC software can address each bit in the port Byte individually. One bit is used for PTT, another pair are used for the CTS and RTS lines on the serial interface, and a couple make up the modem interface. Each bit can be configured as an input or an output bit.

The problem is that each time the 6803 addresses the port, a high speed glitch is produced on the bits that are configured as outputs. This results in a few nanosecond wide glitch that in the TNCs we've looked at, occure at a repetition rate of about 14Khz. The high impedance and capacitance cascode PTT driver circuit stretches this pulse its way to the PTT pin of the radio. The end result is a large amount of hash appearing on the PTT pin. The hash is variable and is worse when the TNC has received a multi-packet group.

On radios that combine Tx audio and PTT, such as the ICOM, the result is garbled packets. The primary symptom seen is that the station will only decode and ACK the first packet in a multi-packet group, resulting in many retries. Radios with fast T-R switching can also be affected.

Fortunately, the solution is simply the addition of a small capacitor to slow down the response of the PTT circuit. Locate Q3 on the circuit board. It's near the center right looking from the front. Solder a 0.01uF capacitor between the base and emitter of Q3. This swamps the the base with capacitance and shunts the spikes.

Three TNCs in our area have been examined. All had the same problem and all responded to the fix. Would like to thank Rich, AA4KS, of PETS in Knoxville for first identifying the problem and testing my SWAG (scientific wild-a__ed guess) fix. Happy packeteering. john, wd4oqc.

- PRM -

FADCA > BEACON

THE FLORIDA AMATEUR DIGITAL COMMUNICATIONS ASSOCIATION

BYTES FROM THE WRITE-ONLY MEMORY

Ted Huf, K4NTA

I will keep it short this month because we have a lot for the FADCA>BEACON page this month. I really want to thank the fellows who contribute to the effort of putting together this part of PRM. I could not do it by myself. We could use more news of what is going on in your area. It does not have to be in the finished form, just send me a message on the MailBox system of what is going on in your area and I will include it here. Others would like to know!

I want to congratulate Chuck Harrington, WA4GPK on his fine work with the Atari 520 ST. I saw the terminal program that he wrote while at the Jacksonville Hamfest and it is a fine piece of work. One of his next efforts might be a WORLI type BBS written in C so that it could be ported to other machines.

- PRM -

FADCA BOD NOTES

The FADCA Board of Directors held an informal meeting at the Jacksonville Hamfest in August. The following items were discussed.

1) Elections for the directors' positions are due. Jim Diggs will organize and conduct the elections with administrative support from Gwyn Reedy.

2) The results of the balloting will be announced at a FADCA annual meeting to be held in early November in a centrally located site. Jim Diggs will make the meeting arrangements.

3) The Board members support and encourage the activities of FADCA's Packet Frequency Coordinating Committee and FADCA Network Coordinating Committee.

4) Next years goals for FADCA should be to build motivation and enthusiasm for packet networking through educational activities. It was recommended that a video tape be prepared for distribution and that an 820 MailBox be built for use in demonstrations at hamfests throughout the state. Rick Mixon volunteered to assemble the system if parts are donated, and see that it is sent to the major hamfests for use by persons manning the local booth.

5) FADCA should support N2WX's network software development by providing an 820 system for his use.

- PRM -

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** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** **
** FADCA is coordinating our digipeaters in Fla.**
** If you are planning to put up a digipeater,  **
** contact FADCA at 812 Childers Loop, Brandon, **
** FL 33511 for registration forms.             **
** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** **
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CENTRAL FLORIDA PACKET NET

Doug Hubbs, KF4TM

The purpose of the Central Florida Packet Net is manyfold in that we encourage activity of packet communications via VHF, the handling of formal traffic and bulletins. It is hoped that the above stated items will promote friendship among all amateurs of the central Florida region while improving our operating techniques.

Of the utmost priority, is the fact that Packet Networking is the most effective use of the spectrum and in being such, the most effective communications mode during an emergency when traffic handling needs to be ACCURATE and fast for effectiveness and usefulness.

The realization of these goals will be through the collective efforts of all operators in the area. We of the CFPN plan on being the vehicle by which all operators may attain these goals in providing the coordinated net structure, assigned liaison duties and even the opportunity to be the Net Control Station (NCS).

The planned net operations are to have sessions daily at 0130Z (Summer) and 0230Z (Winter) on the Daytona Beach digipeater (DAB) using CONVVERSE MODE (unconnected). When there is traffic to be handled NCS will direct those stations involved to CONNECT and handle the traffic. These operations should last about 15 minutes per session. In the event of large volumes of items, stations will be directed to another simplex frequency to handle.

This net has outlets to all major NTS nets and several local VHF phone nets in Central Florida.

Any and all comments regarding this proposed operation (CFPN) should be directed to:

CFPN NET MANAGER
Doug Hubbs, KF4TM
1690 Second Ave
Deland, FL 32724

or through a radiogram which may be sent via 9040CF or the ORL BBS systems.

- PRM -

FOR SALE

ICOM IC-730 Transceiver, IC-PS15 power supply, very low hours and never mobile. Power supply is wired to supply power to 2m amp and IC-730. Must sell to help support computer habit that is out of control. S500 +shipping/bestoffer.813-681-6868Brad, KE8CW.

-PRM-

THE 'STAR' NETWORK OF FLORIDA

Jim Diggs, K4AHO

At the meeting of the Northern Florida FNCC (FADCA Network Co-Coordinating Committee) I introduced an idea that has been floating around in the back of my head for some time. The main idea was the utilization of the site at Lake Wales as a backbone network site. The Lake Wales site boasts one of the highest average height above sea level locations available in Central Florida. There is a 2 meter antenna at approximately 450 feet with feedline already installed and there is a building the digipeater equipment can share. The disadvantages of the site are a high incidence of lightning strikes and 1 hour driving time from Orlando. Nevertheless its availability outweighs the disadvantages.

The Lake Wales digi will be built with reliability in mind as well as having the ability to operate under full power and network load for several days to a week without AC Power. The generous sized cabinet will be sealed to minimize the effects of adverse weather conditions. The radio will be designed to meet the switching speed requirements of 9600 baud operation. Receiver data outputs and transmitter data inputs will be installed for both 1200 bauds audio signal and 9600 baud fsk signals. All mounting areas and wiring requirements will be designed to allow future options to be installed without shutting down the digipeater and returning it to the shop. The future options will include a remotely programmed on-board computer which will allow such things as AC Power loss warning by Beacon Mode, remote programming of TNC parameters (somewhat like the GLB), status reporting of battery voltage, internal temperature and forward and reverse power. Eventually the status reporting will include an external weather station. The 9600 baud modem will be planned for as well as a dual port operation which may allow two speed operation (1200 and 9600 baud) as well as switching a packet from one speed to another. This will allow the LAN ports to migrate to 9600 baud as time and resources permit, rather than having to make the switch all at once.

Why do I call this digi a "STAR"? With a gain antenna at 450 feet and 100 watts transmitter power I strongly believe this digipeater will serve the Melbourne, Daytona Beach, Sebring, Port Charlotte, Sarasota, Tampa/Clearwater, and Orlando directly. It may be accessible from Ocala and Stuart as well. If all these cities are located on a map and a line drawn to Lake Wales, a wheel like pattern is observed. I call this pattern a "STAR". If this digi gets the 220 linking effort out of the doldrums then it can be called a "STAR" for another reason.

The system I proposed at the FNCC meeting consist of two elements at each point of the "STAR.". The first element is a simple battery backed 220 MHZ digipeater using a gain antenna and running 100 watts. The second element would be the Local Area Network Port. This would first start out as a dual port digipeater and perhaps become a packet switch later. These ports would cross connect the Local Area Network frequency to the 220 MHZ backbone frequency. The responsibility for the construction and operation of the dual port digi/ switches would be the LAN in which the port resided. Hopefully they would be battery backed. Individual users would be discouraged from using the backbone system directly but would be strongly encouraged to access the system thru the local LAN port. BBSs may have the option of going directly on the backbone to minimize interference with the conversations going on the LAN frequency.

Lest this effort be called more "Vaporware", I will say that the Orlando Amateur Radio Club has donated a sizeable sum to build this digipeater. The Tampa LAN is supplying the gain antenna and is responsible for its installation. This is a serious effort. I hope the Local LANs will support this effort by starting construction of their dual port digipeater. The first target date for this operation is to have the Lake Wales Digipeater installed in barebones condition by the end of October.

- PRM -

BREVARD LAN NEWS

BREVARD LAN NEWS

Bill Newkirk, WB9IVR

The South Brevard Amateur Radio Club was asked to set up a hands-on demonstration at the Space Coast Science Center on August 23/24. The exact configuration of the station is unknown at this time, but hf voice/code and vhf voice/packet operations will probably be taking place. We're looking to expose a bunch of kids to the world of Amateur Radio and maybe even pick up a few converts.

Exams at the Melbourne Hamfest will be at the Melbourne Ramada Inn, corner of Nasa Blvd. and US-1, at 9 AM and 1 PM Saturday September 6, and 10 AM on Sunday September 7. Walk-ins will be OK, but that depends on the space available. Pre-registration info is available by dropping a self-addressed, stamped envelope (also known as a SASE) to:

South Brevard Amateur Radio Club
Amateur Examinations
P. O. Box 2205
Melbourne, FL 32902-2205.

See page 76 in July QST for for information. Exams for all license classes will be given.

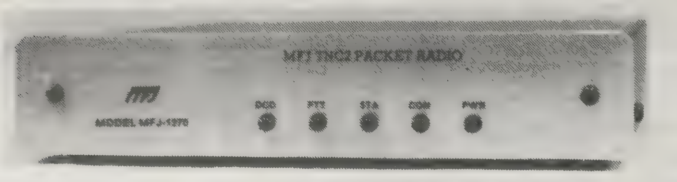
In Indian Harbour Beach, the City Council voted to reject an ordinance calling for the regulation of all antennas, towers, masts, poles, etc. We expect this to rise again as it was the Mayor's idea, and governments tend to keep after something they think they want.

It has been brought to our attention that the South Brevard Amateur Radio Club is the only ARRL Special Service Club in South Florida. We hope that this does not hold for the rest of the year.

Continued on page 19

AFFORDABLE PACKET RADIO FROM MFJ

An identical TAPR TNC 2 clone with a new cabinet and added features ... for an incredible $129.95!



MFJ-1270

$129^95

Join the exciting packet radio revolution and enjoy error-free communications ... for an incredible $129.95!

MFJ brings together efficient manufacturing and TAPR's (Tucson Amateur Packet Radio) leading edge technology to bring you affordable packet radio. You get an identical clone of the widely acclaimed TAPR TNC 2 with identical soft ware and hardware. It's in a new cabinet and includes a TTL serial port for extra versatility.

All you need is your rig, home computer with a RS-232 serial port and a terminal program. If you have a Commodore 64, 128 or VIC-20 you can use MFJ's optional Starter Pack to get on the air immediately. You get interfacing cable, terminal software on tape or disk and complete instructions ... everything you need to get on packet radio. Order MFJ-1282 (disk) or MFJ-1283 (tape), $19.95 each.

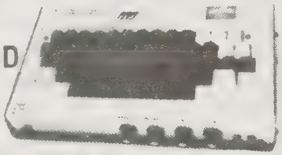
Unlike machine specific TNCs, you never have to worry about your MFJ-1270 being obsolete because you change computers or because packet radio standards change. You can use any computer with an RS-232 serial port and an appropriate terminal program. If packet radio standards change, software updates will be made available as TAPR releases them. Also speeds in excess of 56K bauds are possible with a suitable external modem! Try that with a machine specific TNC or one without hardware HDLC as higher speeds come into widespread use. You can also use the MFJ-1270 as an inexpensive digipeater.

It features the latest AX.25 Version 2.0 software, hardware HDLC for full duplex, true Data Carrier Detect for HF, 16K RAM, simple operation plus more.

Join the packet radio revolution now and help make history. Order the MFJ-1270 today.

Here are MFJ's latest and hottest products for improving your station's performance.

SUPER KEYBOARD



MFJ-496

$169.95

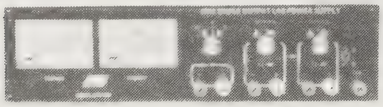
Price slashed 50% to $169.95! Get a full feature Super Keyboard that sends CW/RTTY/ASCII for the price of a good memory keyer.

You get the convenience of a dedicated keyboard—no program to load—no interface to connect—just turn it on and it's ready to use.

This 5 mode Super Keyboard lets you send CW, Baudot, ASCII, use it as a memory keyer and for Morse Code practice. You get text buffer, programmable and automatic message memories, error deletion, buffer preload, buffer hold.

TRIPLE OUTPUT LAB POWER SUPPLY

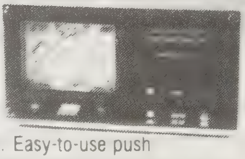
MFJ-4002 $149.95



Lab quality power supply gives you plenty of voltage and current for all your analog and digital circuits. **3 completely isolated outputs**: 2 variable 1.5-20 VDC at 0.5 amp and a fixed 5 VDC at 1 amp. Connect in series or parallel for higher voltage and current. It's short circuit protected, has excellent line (typ.0.01%/V) and load regulation (typ.0.1%). **Lighted meters** monitor volt./cur. 12x3x6 in. 110 VAC.

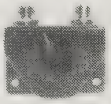
CROSS-NEEDLE SWR/WATT METER

MFJ-815 $59.95



MFJ's cross-needle SWR/Wattmeter gives you SWR, forward and reflected power—all at a single glance! SWR is automatically computed—no controls to adjust. Easy-to-use push buttons select three power ranges that give you QRP to full legal limit power readings. Reads 20/200/2000 W forward, 5/50/500 W reflected and 1:1 to 1:5 SWR on easy-to-read two color scale. Lighted meter. Needs 12 V. ±10% full scale accuracy. 6½ x 3¼ x 4½ inches.

2 KW COAX SWITCHES



MFJ-1702

$19.95

$29.95 MFJ-1701

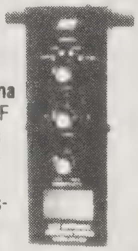
Instantly select any antenna or rig by turning a knob. Organizes coax cables and eliminates plugging and unplugging. Unused terminals are grounded to protect your equipment for stray RF, static and lightning. 2 KW PEP, 1 KW CW. For 50 to 75 ohm. Negligible loss, SWR, and crosstalk gives high performance. SO-239s. Convenient desk or wall mounting.

MFJ-1702, $19.95. 2 positions. Cast aluminum cavity construction gives excellent performance up to 500 MHz with better than 60 dB isolation at 450 MHz. Heavy duty, low loss switch has less than 20 milliohm contact resistance, less than 0.2 dB loss and SWR below 1:1.2. 2 x 2½ x 1 inches.

MFJ-1701, $29.95. 6 positions. White markable surface for recording ant. positions. 8½ x 1½ x 3 in.

ANTENNA CURRENT PROBE

MFJ-206 $79.95



This new breakthru MFJ Antenna Current Probe lets you monitor RF antenna currents—no connections needed! Determine current distribution, RF radiation pattern and polarization of antennas, transmission lines, ground leads, building wiring, guy wires and enclosures.

- **Indicate transmission line radiation** due to high SWR, poor shielding or antenna unbalance.
- **Detect re-radiation** from rain gutters and guy wires that can distort antenna field patterns.
- **Detect RF radiation** from ground leads, power cords or building wiring that can cause RFI.
- **Determine if ground** system is effective.
- **Pinpoint RF leakage** in shielded enclosures.
- **Locate the best place** for your mobile antenna.
- **Use** as tuned field strenght meter.

Monitors RF current by sensing magnetic field. Uses an electrostatically shielded ferrite core, FET RF amplifier, op-amp meter circuit for excellent sensitivity, selectivity. 1.8-30 MHz. Has sensitivity, bandswitch, tune controls, telescoping antenna for field strenght meter. 4 x 2 x 2 inches.

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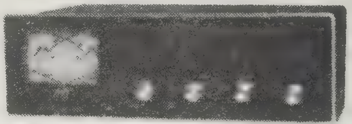

MFJ's best 300 watt tuner is now even better!

The MFJ-949C all-in-one Deluxe Versa Tuner II gives you a tuner, cross-needle SWR/Wattmeter, dummy load, antenna switch and balun in a new compact cabinet. You get quality conveniences and a clutter-free shack at a super price.

A new cross-needle SWR/Wattmeter gives you SWR, forward and reflected power—all at a single glance. SWR is automatically computed with no controls to set. Has 30 and 300 watt scale.

Run up to 300 watts RF output—and match coax, balanced lines or random wires from 1.8 thru 30 MHz. Tune out SWR on dipoles, vees, long wires, verticals, whips, beams/quads. 10x3x7 in.

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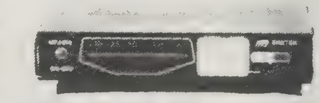

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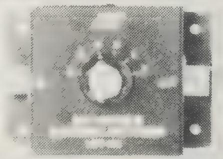

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GRAPES

President: Paul Quillen, N4LCD
Vice-President: Justin Myrick, N4LEL
Secretary: Dave Chapman, KD4LM
Treasurer: Garey Barrell, K4OAH

GRAPES is alive! Contrary to all current rumors, GRAPES is in better shape than ever before because we now have a system . . . and IT WORKS! The reason GRAPES has not been heard from in writing is that our Newsletter Editor, Bill/WB2CPV, was lost to the overload of work and moving vans. Hopefully we'll be passing along the happenings in a timely fashion from now on.

As we all know, PACKET development took off like a rocket within Georgia during 1985 (a 300% increase within the year). When the user base got to the point of hundreds of users on one or two key digis, the system simply quit working. It was obvious that something had to be done at once. That's when we initiated the following:

1. Local LAN digis were installed to provide local coverage in order that 80% of the traffic could be moved off 145.01 and a packet could pass through Georgia (from Alabama to South Carolina) and not be crushed by local traffic.
2. The BBS's were provided with dual ports: one on the 145.01 trunk, the other on the local LAN frequency. Users were asked to talk to their BBS on the LAN side. This reduced the high volume flow from the BBS's which was adding to the problem both for the local and the interstate user. (At one time the "holding time" on one local digipeater began to approach 35 seconds prior to digipeating a packet. Timing went nuts and users found their packets colliding with their own acks.)
3. A "Prime Time" was set aside from 6 p.m. to Midnight during which only humans would be on 145.01. The BBS's would not forward to each other during this time so that interstate traffic could flow through the state and everyone could "Digi DX" without having to compete with the BBS's.

Simple? Unique? Not really. It's called cooperation. It's called structuring by agreement . . . the only way Packet Radio can ever work. Without networking systems and structuring plans, how can we ever hope to send out our Packets farther than the guy next door. And if you think about that, we'd all determine it's easier to walk out in the backyard with an iced tea glass in your hand and lean on the fence (and a lot less expensive).

So, if you fellows in Carolina and Tennesee and Alabama (et al) find your packets moving through the GRAPES area more easily . . . now you know why. Now you also know why you can't access the BBS's on .01 . . . they ain't there!

EAL LAN Formed on .03

Bill, WA4GAI

June 7 was the first meeting of the EAL (East Atlanta LANS) and of the small group attending, the following officers were elected: CEO, Bob (KB4KIL); Treasurer, Dave (KA4IAR); Secretary, Gary (KE4ZV; and Newsletter Editor Bill. Also a Satellite Gateway Committee was formed of Bob, KB4KIL; Byron, W4BIW; Gary, KE4ZV and John, WA4BLM.

It was agreed that LAN membership dues would be $20 of which 100% would be forwarded to the GRAPES organization ($10 for PRM subscription and $10 for networking facilities) and that all current GRAPES members would be grandfathered in as LAN members, but that they would go through the LAN at renewal time.

GEORGIA LANS

North - 145.09
  WB4GQX-4
  WB4GQX-3 145.09/.01 Freq. Gate
  W4KAU, W4KAU-1 145.09/.01
    (GA to Knoxville Gate)
  W4GZX (Cleveland TN Digi)

East Atlanta - 145.03
  KJ4FF-1
  WB4BXO-1 (LaGrange)
  KA4OVX 145.03/.01 Freq. Gate

Metro Atlanta - 146.13/73
  KD4NC-1
  WA4VMV Freq. Gate

West GA - 145.07

South GA - 145.09

Central GA - 145.05
  K4ICT-2

Augusta - 144.99

Savannah - 145.03

GRAPES / STATE LAN MEETING

Eric, AA4SW

Letters were sent to all areas of the state announcing a meeting following the Atlanta hamfest. Represented at the meeting were the East Atlanta LAN, South Georgia LAN, East Georgia LAN and the North Georgia LAN. Since the Digi owner in the East Georgia LAN had moved, contact had been lost with the Augusta group. Agreements were made to attend one of their meetings to discuss past development of the Georgia Networking Agreement and future plans to help bring the Augusta area on line with a BBS/NNC if they desire to participate. There was also discussion concerning contacting the SE GA LAN through the Augusta group. The South Georgia LAN was represented by proxy Eric, AA4SW, and he reported on several promising new and much higher sites which may be available in the Perry and Tifton areas which should free up several lower site digis for use further south and east in the network. It seems we have lost the Valdosta digipeater, however plans are afoot to re-erect a digi in he South Georgia area as reported by Wayne. We would like to thank Larry, KF4JF for the long hours in keeping the Valdosta digi in service and providing an hf gateway for many months. The middle Georgia area was not represented, however they do have a group on 145.05 with no connectivity to the 145.01 trunk system (reported by Buck K4ABT). The West Georgia group was also not represented, but growth has been very slow in the area and died down somewhat when Buck moved to Warner Robbins. The Columbus area may wish to try using the East Atlanta LAN's West digi WB4BXO-1 on 145.03 in La Grange until activity picks back up in that area.

TAPR/GRAPES NNC DESIGN TEAM MEETS

Eric, AA4SW

The TAPR/GRAPES NNC design team met for the first time just to get to know one another and map out some very tentative procedures. The team consists of John, WD4OQC of Chattanooga Gary, KE4ZV of Snellville, GA; Eric, AA4SW (ex N4CI) of Conyers, GA; Steve, WB4BXO of LaGrange, GA; and Chris, KA4OVX OF Conyers, GA.

We tend to be short on networking experience. However, that is a temporary problem. I think that others in the TAPR test group will supply arguments and justifications for various approaches and within our group, several ideas have been proposed. We have much to do prior to directions in routing and higher level protocol discussions. One benefit we will be able to offer the Alpha team is RF contact between 2 locations at the moment and if we can get 2 more systems we should be able to be a real world testbed on a reasonably good vhf/uhf topography. Some concern was still expressed about the capacity of the NNC to handle higher order network functions. This is a very packet specific board on which Lyle/TAPR has done a very good job. Suitable to sit on a mountain top with no whirlies on it and feed stuff to a bigger box at a safe location, it is a good platform to begin our network and should be fairly inexpensive to mass produce with 4-rf port capability. It should become a pretty good front end for a larger, more powerful, mini type computer. Come on fellers, where is the cheap 9600 bps deck to go with the system??? It was also decided that we will set up a telephone BBS strictly for the NNC developers. It will reside at KE4ZV and probably run on an IBM clone with a 20 meg drive. We currently are evaluating Modula-2, Pascal, and C for HL programming. The winner will probably be C but we have the others available to evaluate and test. AA4SW's unit seems to be working fine and has been tested with some small compiled C modules and KE4ZV's machine seems to have a somewhat flaky B drive which will be replaced momentarily. Thanks Lyle/TAPR for continuing to forge ahead in spite of the many sideline rock throwers. This is still a hobby and whatever comes of the project will be a fun experience and a good learning tool for some of us! A full day hot-box meeting is planned for the near future to settle on early development efforts, planning, and laying the groundwork for interfacing with the others of the ALPHA test team.

NORTH GA LAN DIGI'S

AA4EO-1	145.09 Fairmont, GA
WB4GQX-4	145.09 Amicalola Mt.
W4GZX	145.09 Cleveland, TN
NC4G-1	145.01 Rome, GA (Trunk)
WB4GQX-1	145.01 Sawnee Mt. (Trunk)
W4KAU-1	145.01 GA to Knoxville Link
W4KAU	145.09/01 Mailbox Gateway
WB4GQX-3	145.09/01 Auto Freq Switch Gate for LAN

Current elected officers of the North Georgia LAN are: President, Dick/W4KAU; Secretary-Treasurer, Cindy/KJ4IU; Technical Coordinator, John/WD4OQC.

PACKET RADIO NETWORKS: LEARNING FROM CELLULAR

Bob Bruninga, WB4APR

In the Washington, DC area we have successfully moved most of the local BBS traffic off of 145.01 onto 145.05 by installing dual VHF radios on the W3IWI BBS so that EASTNET traffic can be forwarded on 145.01 with minimum QRM from local users. Two digipeaters on 145.05 assure that users throughout the metropolitan area have access to the BBS. A few other local BBSs such as the C-64 WB4APR HF gateway share 145.05 and use it for local forwarding. As more and more users join the packet revolution we are beginning to see local clubs with local interests using packet to augment their club activities. In this area our local club (not packet) was planning to put up a BBS to serve its club members and also to serve the area as a local digipeater on 145.09.

With the BBS and TNC at a members house at 40 ft. for testing it was soon apparent that all members could access the system either direct or using a near-neighbor as a digipeater. Taking a lesson from Cellular we realized that the needs of the club could be met without raising the antenna to the 200 ft. level and by keeping the antenna lower, we would see less QRM from other nearby areas using the same frequency. Certain key members agreed to leave their stations on for digipeating and extending the net to all members.

This concept would work well if regional packet coordinators would designate certain frequencies as local use only and allow no wide area digipeaters to be installed. Although no set rules would be established, a 25 watt power limit and 75 ft. antenna height limit over average terrain might suffice. By reserving two or maybe three frequencies, and a little bit of coordination, many local club could share the available frequencies and still have area coverage with minimum QRM.

This Cellular way of thinking is quite foreign to our experience as VHF repeater users but is the way to the success of CELLULAR technology. Look at your local CELLULAR antennas and you will not see them on hills or ridges; the optimum location is in the center of a valley where the geography makes a well defined local cell. In any case most antennas are on the order of 100 ft. or so. Another key to the success of CELLULAR is power control; the transmitter power of all mobiles is under the control of the central computer to assure that only the minimum power necessary is used.

The purpose of this article is not to condemn wide area digipeaters in any way, since they are the way to packet radio connectivity; but to encourage a CELLULAR approach to the design of local area networks where relatively confined areas of interest can be defined. The following frequency proposal summarizes these thoughts:

145.010 Wide area digipeaters preferably located on metropolitan fringes to link between regions (to be replaced by 220 mhz)

145.030 Simplex, local use, or digipeaters as agreed locally

145.050 Wide area digipeaters in the center of regional activity

145.070 Local use (CELLULAR)

145.090 Local use (CELLULAR)

TNC-2 SWITCHABLE VHF/HF

Tom Victor Segalstad, LA4LN

For those of us with limited funds for our radio hobby we may like to operate our one and only TNC-2 on both VHF and HF. In order to do this with the original TNC-2 one will at least have to:

1) Change communication speed from 1200 to 300 bps with the help of the rear micro-switch.
2) Detune the two tone-determining potentiometers (R77 & R78) at XR2206 (U16). (Demodulator tuning can be held at 1700 Hz center tone in both cases.)

What we need is a switch which will do 2) for us, and also exchange the input filter shaping components (R93 & C54) for us. The on/off switch is not essential for the TNC because the power supply switch can be used instead. Therefore the on/off switch (really a double-throw switch) can be used for VHF/HF switching instead.

Traces were cut a number of places in order to do this modification. Diode switching is applied between two pairs of tone-controlling potentiometers at the XR2206. A miniature relay switches the discrete components at the input filter.

First, the leads from R77 and R78 leading to -5v were separated, each connected to a Si-diode (1N4148). The other ends of these potentiometers were connected to a corresponding pair of new similar potentiometers (Radio Shack No. 271-340), whose other ends were likewise connected to Si-diodes. Each pair of Si-diodes were led to one switching-section of the on/off switch; the midpoint of this being led to -5v.

The other switching-section of the on/off switch is triggering a miniature double-pole double-throw relay (Radio Shack no. 275-213). The relay brings in 226 k ohm and 10 nF for R93 and C54, respectively, when in the HF mode.

Minor changes to the resistances of R81 and R82 may have to be done in order to get the new configuration aligned properly. I used a 47 k ohm resistor in parallel with R81, and a 82 k ohm resistor in parallel with R82. This will depend on the internal resistance characteristics of the Si-diodes being used.

-PRM-

RMPRA > PACKET

A NEWSLETTER OF THE ROCKY MOUNTAIN PACKET RADIO ASSOCIATION

DATELINE: THE CONTINENTAL DIVIDE
Bob Gobrick, WA6ERB
President, RMPRA

"GOLDEN SPIKE AWARD": In conjunction with the "Golden Packet Award" being offered by the Pacific Packet Radio Society (July, 86 issue of PRM), the Rocky Mountain Packet Radio Association is offering the prestigious "Golden Spike Award" in the spirit of the brave Western packeteers who complete the link across the Continental Divide. The award is being offered to packeteers in the bordering states that are able to establish links into the Great Rocky Mountain backbone system (Grand Junction east to the Front Range corridor of Cheyenne, Loveland, Denver, Colorado Springs, Pueblo and soon Albuquerque).

On the Western front, the Utah Packet Radio Association gang plan to capture their award by filling the missing link between Grand Junction and Salt Lake. Gary, NB7B, Steve, WA7WAB, and others from UPRA plan to attack Blue Mountain (east of Vernal, Utah) on the weekend of August 16. From this site it's a straight shot to Grand Junction and a one-hop to Salt Lake by way of the Snowbird digipeater. Good luck to the Utah gang - this could be the Front Range link to California.

On the Eastern Front, separate groups in Nebraska and Kansas are trying to get digis high enough above the cornfields to sight the Rockies. The gang from Nebraska is pretty close to taking a shot at the Cheyenne, Wyoming mountain top digi. The Golden Spike gets nearer to being set...

COLORADO STATE HAMVENTION: Sunday, August 10, was a big recruiting day for the RMPRA packeteers. Bill, W0GVT, along with others from the RMPRA kicked off a new recruitment campaign at the Hamvention. With a display of multiple packet setups, parking lot digis, new handouts, a large "Join the Packet Revolution" banner, and a lot of enthusiasm, over 20 new packeteers joined the revolution. As an aside, the other important factor was that a local vendor - Miley's Radio, had a case of new MFJ 1270 TNCs that were completely sold out by the end of the day. It was also at this convention that Edie Sheffield, KA0MQA, an active RMPRA member, was awarded " Colorado Ham Of The Year" - congratulations Edie.

WIMU HAMVENTION: The weekend of August 1 saw the annual pilgrimage of hams from Wyoming, Idaho, Montana, Utah and Colorado merge on the resort town of Jackson Hole, Wyoming. Packet was the dominant theme of the show. Two lively and packed sessions were put on by the Utah packeteers, highlighted by guest speaker Lyle Johnson WA7GXD - president of TAPR. Lyle gave all the latest updates on the NNC project (in the Alpha stage) and information on other technical projects across the country.

PACKET RADIO MAGAZINE: I have been getting positive comments lately on our club subscription to the Packet Radio Magazine. A major benefit comes from the exchange of information in the club section - especially the hints and suggestions. One RMPRA packeteer mentioned that he was able to streamline his PBBS operation based on info he read in the club section. I would like to encourage the other clubs to keep up the flow of technical and operational information in your monthly sections. Another benefit (as rumor has it) is that the TAPR publication "Packet Status Register" will become part of PRM in September.

CLUB GOALS: At a recent Board of Directors meeting we had to do a lot of soul searching to decide what our purpose and direction should be now that we've grown beyond our infancy stage. When the RMPRA was formed two years ago it was the RMPRA packet pioneers who set up the first digis and the first PBBSs. Acting as the catalyst, we now are experiencing many Rocky Mountain repeater and ham radio clubs picking up the ball and taking over this role. Much of this is due to these organizations having the needed funds and manpower available to establish mountain top systems. With this, we reevaluated our charter and decided that our new direction would be in supporting the Rocky Mountain ham community in the areas of education and guidance, rather then competing with them in building digis and PBBSs. This redefined charter has spun off a number of new committees - namely ones to handle technical support, standards (frequency and networking guidance) and public relations. We are now the organization that individuals and clubs can turn to for guidance on how best to use packet radio to meet their needs. Our realization was that a 100+ member RMPRA organization could not be everything to everybody (besides, how many CW and SSB only clubs do you know of). We would very much like to hear from other clubs and your role in serving the ham community. Please send Gwyn a write up on your club philosophy.

RMPRA DATA

Membership: RMPRA membership dues are $20 annually which includes a years subscription to Packet Radio Magazine as well as the quarterly RMPRA > PACKET regional magazine.

Voice Net: Sunday 0800 RMT 3890 KHZ

Newsletter Material for RMPRA by mail, Compuserve EMAIL (70466,1405), or WA6ERB PBBS via K0HOA HF Gateway.

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PPRS . . . SITE OF THE FIRST U.S. DIGIPEATER

THE PACIFIC PACKET RADIO SOCIETY

PPRS NEWSLETTER FOR AUG86

Walter E. Miller, AJ6T
PPRS President

The sudden emergence in the past two months of automatic packet forwarding networks has quickly changed the scope of amateur operation in Northern California.

It is no longer necessary to fight other packeteers to gain access to remote packet bulletin board stations. With automatic forwarding in place on VHF (and partly on HF too), operators can confine most of their activity to the local BBS, and let the BBS contend among themselves to deliver messages in less than 24 hours. The rapidly evolving system already works quite well.

In addition to the software required to run these automatic routines on 820s and PC clones, a key feature in the success of this network was the appearance of multifrequency or frequency agile PBBS. The main North-South link of boards extends from Palo Alto to Rancho Cocamonga: KA6M-1, N6IIU-1, W6CUS-1, AA4RE-1, KE6BX, W6IXU, WB6KQY, WB6KHA, KD6SQ. KA6M-1 has been reactivated for DRNET and AMSAT I/O only. N6IIU-1 moves automatically from 145.07 to .09 in the early morning to exchange with the BBS on 145.09 (W6CUS-1, among others). KE6BX is dual port on .01/.09, WB6KQY in Pomona on .01/.36 (.36 is a main BBS frequency in southern California, whereas .01 and .09 are the main freqs up here in San Jose). W6CUS-1 PBBS is active on 145.09 and 7.093 (for selected BBS connections). W6IXU software now works with the WORLI auto forwarding scheme which uses the "@" symbol to target remote BBS. According to NI6A (the sysop of W6CUS-1), all of these BBS stations can forward automatically among themselves:

	ARIZONA		
KR5S	Sedona	145.01	7093
KE7CZ	Dewey	145.01	14.107 days
N5EDH	Camp Verde	145.01	14.107 days
K7PYK	Scottsdale	147.70/10	7093
K7BUC	Phoenix	144.51/5.11	7093 eves, 14.103 days
WB7BNI	Camp Verde	145.01	144.51/5.11
	CALIFORNIA		
N2DME	Sacramento	145.07	145.09
WA6NWE-1	North Highlands	145.09	
WD6BFC	Redding	145.09	
N6HAV	Fresno	145.09	
N6IIU-1	Palo Alto	145.07/.09	
KA6M-1	Palo Alto	145.07	DRNET/AMSAT
W6CUS-1	Richmond	145.09	7093
AA4RE-1	Gilroy	145.09	
KE6BX	Hollister	145.01	145.09
W6IXU	Arroyo Grande	145.01	
WB6KQY	Pomona	145.01	145.36
N6LUC-1	Camarillo	145.03	145.36
N6CUS-1	Hacienda Hts	145.03	
WB6KAJ-1	Brea	145.36	14.107
KD6SQ	Rancho Cucamonga	145.36	14.107
NK6K-2	Redondo Beach	145.36	U011 Gateway to EASTNET (Really?)

Now that we have all this connectivity, how long will it be before level 3 networking really takes off? In the meantime, will all of this automatic operation take the pressure off already overloaded channels, or will it ultimately generate even more interference and retries? How long before the fabled "220 backbone" finally appears at 9600 baud? Only time will tell.

To send a message to a remotely linked BBS use the "S W6XYZ @ BBS" command. For example, "S AJ6T @ W6CUS" should work from any of the boards listed above. The "SF" command will leave a copy of the message at each BBS it travels through (useful for QSTs). In addition, the sysops have created an "S ALLMB" which will leave a message on all of the stations on the N-S pipeline listed above. "S MBALL" works similarly for the South-to-North path. "SF OSCAR @ ALLMB" will leave your broadcast on all BBS south of the entry station. Automatic NTS traffic can also be handled and other catagories have been created. See specific instructions on the boards. In other related news, the ARRL proposal for an STA to operate HF automatic packet stations across the nation has begun to circulate. I have not seen it yet. However, the originally announced idea to limit the request to the FCC to only 15 stations seemed too restrictive to me. At the July 1986 PPRS general meeting, our organization unanamously approved NI6A's motion to request that the Pacific Division Director (KB6ZV) encourage the ARRL to request an STA for at least 50 HF stations to make the coverage more reasonable and the test results more meaningful. With traffic mushrooming on packet, only 15 stations handling all of the country's HF traffic and automatic links to VHF seems pitifully small.

The guest speaker at the July PPRS meeting was John Baxter, G4KAH. His company is ready to release a new 33cm (904 MHz) 10W FM rig. This band was recently authorized to the amateur service by the FCC. John suggested that we should "use it or lose it." His second-generation rig will be microprocessor controlled. PPRS members suggested that fast turn-around time should be an important spec on that rig.

At the August PPRS meeting, Kent Cullers, WA6TWX, described NASA's SETI (Search for Extraterrestrial Intelligence) project. Kent is a scientist at the NASA Ames Research Center. He described current theories on the evolution of the universe, and the likelihood of intelligent life around distant suns. Some scientists think that narrowband microwave signals at the "waterhole" frequency (1.4-1.6 GHz) might be the best place to look for an ETI beacon.

Satellite JAS1 has been successfuly launched by the Japanese and its mode JA (analog) transponder has been working well. When will the mode JD packet operation begin? How many stations are ready with the PSK modem necessary for this transponder? Circuits were published in the Proceedings of the 5th Amateur Radio Computer Networking Conference, the JAS1 Handbook available from Project Oscar, and (best looking of all) QEX for August 1986. Is anybody planning to distribute a PSK printed circuit board?

73 de AJ6T

- PRM -

THE PERIPATETIC PACKETEER

KI7L

21:24 local; what to write? My "gruppenfuher" will be up through the night listening to pink noise hoping to hear the reflected radio wave of another amateur via the brief ionization caused by a small piece of the universe disintergrating in our atmosphere. No problem downloading this file at any time tonight. Hmmm, packets by meteor scatter......higher baud rates probably needed. Nevertheless, MS is the most reliable form of radio communication (other than line of sight).

On to the real topic for this column, mountain topping, using packets of course! Sunday August 10 was spent at 11250' in one of my favorite places. I left the XYL at the Snowbird pavillion to hear the Utah Symphony reproduce Beethoven and took the tram to the top of Hidden Peak, or what's left of it after the bulldozers leveled it off for the tram station. A short hike along a ridge to Mount Baldy (every range has a Mount "Baldy"). The hike was lovely; wild flowers everywhere and still in bloom this late in the year. Still significant snow patches even lower at 9000 feet! This year is a cool one.

Huffing and puffing the lungs works to suck in the thin air, "no pain, no gain" keeps me going. Last week Martin, N7BWU, and I established that the route between Snowbird, just east of Salt Lake, and Carlin, in north cental Nevada, would not provide a digipeater path to link with California. Today I am exploring additional digi link paths.

The portable system I am using consists of an IC-02AT driving an Alinco 30 Watt amplifier with a GaAsFET preamp operating through a homebrew 3 element delta loop portable antenna. The whole system easily fits in a small rucksack and weighs little, except for the 2.5 amp hr gel-cell. A few cables and ARRL's little red book complete the 300W ERP 2 meter station. N7BHC will of course disagree since SSB is missing. Anyway I am happy with the outfit since its powerful, light weight and able to communicate with the vast majority that inhabit 2M. Shortly, the M-100, the TNC-200 and the RS-TRP 100 battery operated printer, purchased on sale for $99.95, will comprise my truly portable packet station. This system will of course not fit neatly into an attache' case (see Dave's fine article in PRM Vol 1) but it will provide portable, hard copy, packet communications.

Assembled, the rig and was able to work repeaters in Kemmerer and Rock Springs in Wyoming, Grand Junction, and I am pretty sure, Leadville, Colorado. The Leadville repeater site is a good long haul but could provide an alternate link towards Denver. The Alinco 30 W amp is a nice unit and I would recommend it for any serious mountaintopper. Mount Harrison in southern Idaho was also worked, demonstrating the link possibilities to the north. I tried again to key the Carlin repeater but to no avail. That route

Continued on page 20 >>

WIMU '86

Dave Pedersen N7BHC, Pres.

The WIMU (Wyoming-Idaho-Montana-Utah) Hamfest took place over the the first weekend of August in Jackson Hole, Wyoming. Once again, packet radio was a major force at the hamfest, which is the biggest one of the year in these parts.

In past years, although packet radio has had a major role in the hamfest, the only stations in operation were the stations expresely brought into town just for the display booth by those doing the demos. This year, the growth of packet radio in this part of the world was evidenced by several people bringing their portable stations along just for the fun of it, resulting in at least 8 stations in town, including a WA7MBL BBS operated by Chris Clark, N7GNT.

The primary hands-on demonstration system included a 24" Conrac monitor at eye-level, and a banner on the wall that would not look out of place stretched accross a road.

I discovered on Friday afternoon that I was giving an introductory talk the following morning, which was to be followed by Lyle Johnson ,WA7GXD, giving a talk on advanced packeting. Both talks were extremely well attended.

Great strides in packet technology were made in the planning session on Friday evening with Lyle and several of the packeteers from Salt Lake, with a minimum of rewriting of the Laws of Physics. The waitress at the Pizza Hut (notice how TAPR people always eat pizza on Friday evenings at these sort of gatherings) seemed very keen to see us leave...must have been the question about discounts on pizzas by Lyle. Maybe we will tell the full story at the TAPR meeting next February. Saturday evening entertainment came in the form of a "Chuck-wagon" dinner and Western singing show at the "Bar-J", just West of Jackson. This is a must-see place if you ever get to Jackson. They served 550 people in 12 minutes the night we were there. Lyle, in a fit of loyalty to Tucson, refused to admit that the Bar-J was better than a similar establishment in Tucson, and has promised to prove it next February.

One of the side benifits of Lyle's presense at WIMU was that Chris, N7GNT, and I discovered that Lyle has been building the NNC prototypes by hand. Consequently, we are helping him out by building 16 NNCs at our place of employment, Gentner Engineering. It is very enjoyable to have a complete NNC board soldered in about 10 seconds.

Packet radio has already been placed on the agenda for next years WIMU hamfest, to be held July 31 to August 2, 1987 in Jackson Hole. CU there.

LAPRS

The Louisiana Amateur Packet Radio Society

[Our apologies to LAPRS for not displaying their fine new logo this month. eds.]

This article is being written on 12 August, just after the Shreveport Hamfest. The Hamfest was most enjoyable, and it was a pleasure to meet fellow packeteers from the north part of Louisiana. It seems that the packet revolution has reached every corner of the state!

Much was accomplished in Shreveport. LAPRS is now affiliated with the Louisiana Council of Amateur Radio Clubs (LCARC) and ARRL affiliation is now under way. Thanks to Jack Coffee, WD5ELJ, we now have an official LAPRS logo, and if all goes well, you may see it at the head of this column. Actually, we have two logos. One is a round shape used for patches, and the other will be used for letterheads. The letterheads are now being printed, and the patches are on order.

LAPRS now has directors representating every major metro area of the state, and they are:

1. Shreveport Metro
   Jerry Thompson KA5EWC
   3035 Boone St.
   Shreveport 71108
   316-635-6537

2. Monroe metro
   E. Benson Scott AE5V
   Rt.4 Box 232A
   West Monroe 71291
   318-396-2424

3. Alexandria metro
   Guy Navarro WD5GIV
   3716 McCann Dr.
   Alexandria 71302
   318-445-5815

4. Lake Charles metro
   Sam Nelson WA5VDM
   3307 E. Napoleon St.
   Sulphur 70663
   318-527-3481

5. Lafayette metro
   Danny Griffith Jr. K5ARH
   123 Normandy Rd.
   Lafayette 70503
   318-989-9039

6. Baton Rouge metro
   Jack Coffee WD5ELJ
   10026 Hackberry St.
   Baton Rouge 70809
   504-293-4764

7. New Orleans metro
   Emile Alline Jr. NE5S
   773 Rosa Ave.
   Metairie 70005
   504-834-6444

If you have any need to contact LAPRS concerning membership, liason, etc. please feel free to contact any of us at the home phone numbers listed above. As packet activity grows, we anticipate that more directors will be added to cover other metro areas.

LAPRS has been incorporated as a non-profit corp. Although we do not anticipate "owning" any equipment, we will certainly accept any donations of equipment that may be useful on packet. If you know of any computer equipment, stand-by power, heliax, 440 MHZ rigs, antennas, etc. not being put to good use, please let us know!

Harry Rees, WB5BZE, of Slidell digi fame, has worked out a way to use a TAPR II TNC with <u>one</u> radio on two frequencies. Using WA7MBL software on a PC clone, the rig normally monitors the LAN freq. (say 145.03). A control-A is embedded in the forwarding file, and when the mail is forwarded, the rig is automatically switched to 145.01 (the current intercity link for mailboxes). At the end of forwarding, the rig returns to 145.03. There are some compromises with this scheme, so if you are interested, I'd suggest you contact Harry. If WA7MBL ever decides to release source code, we should see a lot more innovations such as this. For now though, we will have to work with and around what we've got.

We've had an excellent response to the membership form questionaires. It is interesting to see what other interests packeteers have and I would like to share it with you. I hope to get the data together "real soon now" and publish it in this column. This is a "back burner" project, however, so don't hold my feet to the "fire"!

We have ordered the new TAPR VHS casette by Pete Eaton. This casette is aimed at newcomers to packet, and if it is anything like Pete's first effort, it should be a winner. It makes an excellent program at club meetings. As soon as it arrives, I will pass the word.

I am pleased with the progress LAPRS has made to date. We are off to a good start financially and have good representation across the state. Now that the start-up phase is passed, we will have to turn our attention to the road ahead. We need to start thinking about firming up our inter city links and eventually moving off 145.01 and up to 440 MHZ.

We also need to start getting ready for next hurricane season. We should start establishing packet capability in emergency situations by working with Civil Defense, the Red Cross, and other organizations. In emergencies, information arrives and departs by many different means and from many different sources. Are you prepared to handle this? Packet lends itself to portable and emergency powered operations. Is your station "ready to go"?
`73 de NE5S

- PRM -

BREVARD LAN continued from page 11

The South Brevard Amateur Radio Club will be holding another Novice Class starting on August 25, at 6:30 PM, under the Brevard Community College/Adult Education program at Herbert Hoover Junior High School in Indialantic. Class will cost $20 ($10 registration, $10 books). Contact Bill Newkirk, WB9IVR, 724-6183, for more information.

Any upcoming Novice Classes in YOUR area? Help get the word out if there is and start one if there isn't! Help is available from the ARRL and the Gordon West Radio School and others to get your "black start" program off the ground. ["Black start" refers to a power plant starting "cold" without having other power plants to help "bootstrap" them on-line.]

Remember to cover all the radio and TV stations serving your area. Send them the details with enough advance notice and you'll soon be seeing things on TV and hearing 'em on radio. Be prepared with an answering machine on the phone that will get the calls if you won't be there much.

Another good idea (that I can't remember where it came from, sorry) is to take all those old QST's, CQ's, 73, Ham Radio, etc., and leave 'em in your doctor's office with information on how to make contact taped to the inside flap. Your medical practitioner certainly won't mind having something new and different to read in the office and it just might find some more new people.

Exam schedule for Melbourne/FIT to the end of 1987.

August 16
September 6/7 (at Ramada Inn - not at FIT)
October 18
November 15
December 20

Exams begin at 10 AM, registration begins at 9:30. Exams are held at Florida Institute of Technology. Take US-192 to Babcock St, turn south on Babcock until you get to University Blvd., turn west on University Blvd. 1 block to Country Club Road. Turn north 1/10 mile to the parking lot on the left. Look to the right and see the antenna tower with ham antennas - that's the building you want. We'll be in room Q-11. More information, contact WB9IVR, or call (305) 724-6183.

Anybody given any thought to looking at other modulation schemes than frequency-shift keying used in the 202 modems in the current TNC's? Seems that might be in order now that outfits like Codex and UDS can squeeze 9600+ down a phone wire. This may also take some action by the FCC, as I believe the current restrictions are in terms of baud rate, not bandwidth.

- PRM -

FOR SALE: Packet Portable Station: Pac-Comm TNC-200 $150; Zenith ZP-150 battery powered lap computer all set for packet, with extra memory, and IBM transfer program $525. Bob Gobrick, WA7ERB 303-986-0189.

* * * * *

FADCA NETWORK COORDINATING COMMITTEE MINUTES

Northern Region

The first organizational meeting of the FNCC-Northern Region was held in Ocala on Saturday, July 25, 1986. K4AHO served as Moderator, and K4OZS assisted.

Sixteen persons were present representing the following LANs: S.W. FLA; CLW; TPA; ORL; GNV; JAX; and OCF.

Representatives of each LAN gave current activity reports. Two new digis were reported on the air - Perry (PRY) and Port St. Joe (PSJ). Also a new BBS in on the air in Panama City - KD4EQ.

Hardware reports - updates were given on progress with 220 MHz linking. TPA operation in now imminent, and OCF is in the final stages of development. S.W. FLA is now operating on 220, linking to TPA but not to the BBS.

K4AHO presented his plans for building the "Star of Florida", a 220MHz digi to serve as a topographical hub to be located in Lake Wales, linking outlying LANs to the central hub for relay to other LANs. Concepts for building dual-port digis at outlying LANs was discussed along with software developed by KE3Z/WD4IXI for interim use in these digis. The Lake Wales digi should be operational in about 6 months.

Considerable time was spent discussing the N2WX development of authentic Level 3 Networking software. This dual-port code, and networking code that will run on the TAPR NNC is a significant step in Florida's long-term goals of Networking/High-Speed Linking. It was reported that initial test versions of the N2WX/X820/FAD dual-port code should be available toward the end of Summer.

Good input was received from several new users of the network, which was considered valuable for future planning.

One of the most important topics of the meeting was opening for discussion the making of BBS Utilities files available for all SYSOPS. Each SYSOP agreed to compile a list of his public-domain utilities and to share these files as necessary.

It was proposed as an interim measure to help lessen one of the negative impacts that BBS's have on the network, to remove from ready access those important but long files that seem to endlessly tie up the network. SYSOPS will have a message available listing and describing those files, and describing how they could be requested and downloaded on alternate frequencies or during off-prime-time hours.

The most important breakthrough at this meeting was the agreement that BBS SYSOPS agreed to begin communications with each other regarding operations, so that each SYSOP had a better understanding of what the others were doing. Out of these discus-

Continued on next page

FNCC MINUTES continued from page 19

sions, several important steps were taken -- (a) coordination of forwarding times is to be worked out; (b) steps are to be developed with regard to forwarding files throughout the network; (c) steps to coordinate specialized areas and avoid redundancies in files. The question of converting from Local Time to UTC (Zulu) Time was discussed and should be resolved at a future meeting.

BBS SYSOPS discussed a variety of interim measures to lessen the adverse impact on the network that the BBS's can cause, while retaining efficient message handling and inter-LAN communications. It was agreed that in future meetings, SYSOPS should continue working together on all matters common to each BBS, and as problems become resolved, to communicate these procedures to all BBS users.

The question of registering BBSs was discussed. It was agreed that such registration would lessen the negative impact on the network from uncoordinated BBS operations. Formal steps to begin such registration will be taken at a future meeting.

The TPA LAN has forwarded their PC-BBS (WA7MBL) software, courtesy of W4DPH, to be used in getting GNV back on the network.

KB4CIA agreed to prepare a SYSOP questionnaire to compile data about Northern Region BBSs. Details of this will be discussed at future meetings.

KB4LLO agreed to research the considerable data published in the last couple of years concerning network and BBS usage, with the goal in mind to provide all users with a compendium of suggested network procedures.

There was a consensus that education of new users be given a high priority by all Regions of the FNCC.

The next meeting for the Northern Region was set for October 25, 1986, in Ocala.

- PRM -

FADCA ELECTIONS

Nominations are open for the eight positions on the FADCA Board of Directors. Any member of FADCA who is a resident of the State of Florida may run for Directorship. If you would like your name on the ballot, send your full name and address, FADCA membership number, and a short resume (for publication on the ballot) to: **Jim Diggs, K4AHO , 7900 Plunkett Avenue, Orlando, FL 32810**, to arrive no later than September 20th. Jim has volunteered to handle the details of this year's election. Thanks, Jim.

- PRM -

THE PERIPATETIC PACKETEER continued from page 17

needs to surmount the Ruby Mountains, which are apparently too high. Well, with a thunder storm moving in and the concert over soon, I packed up and started the 4 mile walk back to the car. Parry's primrose, a red flower that grows only above 10,000' in the Wasatch Mountains, was abundent on my way down. The beautiful flower, with a yellow center, grows among the rocks on talus slopes, so most people will never have the oppotunity to smell its pungent, rotting meat fragrance, apparently emnated to attract flies for pollenation.

73, Steve

- PRM -

UPRA DATA

MEETINGS: Held at the Heathkit Store, at 7200 South State (58E.), on the second Thursday evening of the month at 7.30 p.m. The next meeting will be on September 11.

VOICE NET: The information dissemination and question/answer net is held on Tuesday evenings at 8.45 p.m. , on the 146.02/62 repeater. Net control is Steve, N7HPR.

PBBS: The primary PBBS station for the Salt Lake City area is WA7UZO, running the WA7MBL BBS systems with an IBM XT clone. Operation is on 145.01 MHz.

MEMBERSHIP: UPRA membership dues are $15 annually. Additional family members sharing a newsletter pay only $1.00.

NEWSLETTER MATERIAL: This may be sent to the address listed below, or via several electronic routes, which are either ASCII text files on IBM formatted disks or via a BBS. Contact me via the phone number below for more information. Submission deadline is slowly creeping earlier each month...call for more info.

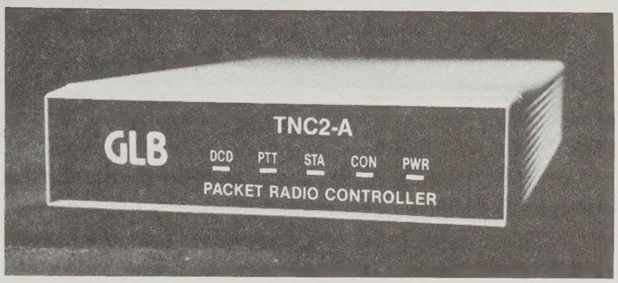
ADDRESS: For all UPRA business:
Utah Packet Radio Association
4382 Cherryview Drive
West Valley City, Utah 84120
(801) 967-5896

- PRM -

GLB TNC2A PACKET CONTROLLER

GLB Electronics - the first commercial producer of packet controllers joins the "TAPR Revolution" to bring you the GLB Model TNC2A Kit. This kit is the latest TAPR design and is supplied with top quality components. The GLB TNC2A is backed by over 14 years of experience in amateur radio kit products and our technical staff is available to assist you daily from 1 to 3 PM Eastern time.

GLB Model TNC-2A Kit



FEATURES

- AX.25 Version 2.0 Software
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- Multiple connects - up to 10 stations
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- Simple radio hookup
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- Tuning indicator socket for HF & satellite work
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- Lithium battery backup for RAM

Hardware
Software } by TAPR
Documentation

SPECIFICATIONS

CPU - Z80A microprocessor
Clock - 2.4576 Mhz standard, 4.9152 Mhz available
Memory - 32K EPROM, 16K RAM standard
HDLC - Packets are controlled by hardware for maximum performance permitting full duplex operation
Modem - 1200 baud, Bell 202 compatible (standard) easily configured for 300 baud/200 Hz shift for HF use
Serial - Computer/Terminal port is industry standard RS-232-C compatible for use with most equipment
Radio - Watchdog timer for channel protection transmits audio levels adjustable for nearly any radio. Wide dynamic range demodulator. Channel busy input (RF-DCD) to inhibit packet transmissions on a shared channel.
LEDs - Power - tells you when power is applied
Status - tells you when you have unacknowledged traffic in your buffers
Connect - tells you when you are in the error-free mode
DCD - tells you when your TNC2A senses other activity on the channel
PTT - tells you when your TNC2A keys the transmitter
Power - +10 to +15 VDC CMOS-110 ma NMOS-260 ma Typical

Model TNC2A Kit NMOS	$154.95
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TOO GOOD TO BE TRUE?

PAKRATT™ Model PK-64
shown with enhanced
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FIRST FIVE MODE DATA CONTROLLER

The Pakratt model PK-64 by AEA is the world's first computer interface that offers Morse, Baudot, ASCII, AMTOR *and* Packet all in one box (hardware *and* software included) at a price many competitors charge for Packet alone (from $219.95 Amateur net). Do not let the low price fool you; coming from any other company but AEA it WOULD be too good to be true. The PK-64 works with virtually any voice transceiver. The Pakratt is the easiest of any to hook up and have operating in just a few minutes.

In Packet mode, the PK-64 offers virtually all the features of every other Packet controller on the market, plus many important features left out by others due to cost constraints. For example, we have included a hardware HDLC, true Data Carrier Detect (DCD), multiple connect with up to ten stations simultaneously and full implementation of version 2.0 of the AX.25 protocol.

Because the PK-64 was designed specifically for the Commodore 64 (or C-128 and SX-64) computer, we have been able to do many things not economically feasible with general RS-232 interface controllers. For example, the Pakratt includes true split screen operation with on-screen status indicators and an on-screen tuning indicator.

ENHANCED HFM-64 MODEM OPTION

The standard PK-64 will operate all modes with a phase-lock-loop (PLL) detector roughly equivalent to all popular packet modems in the marketplace (except we have included extra filtering). The enhanced HFM-64 modem option offers true independent dual channel filtering with A.M. detection (like the famous CP-100 Computer Patch™). The enhanced HFM-64 option also offers a hardware LED tuning indicator (like the CP-100) and a front panel variable threshold control for setting maximum sensitivity under various band ,conditions. We recommend the HFM-64 option for anyone keenly interested in weak-signal heavy-QRM HF operation. For anyone desiring to operate FM RTTY with the standard North American tone pair or CW receive, the HFM-64 is required. The HFM-64 is field installable with no soldering or test equipment required.

WORKS WITH THE POPULAR C-64 COMPUTER

AEA designed the PK-64 around the low-cost C-64 because of the special architecture features making it especially suited to Amateur Radio applications. The C-64 should not be viewed as a mainframe, but rather a very economical accessory to your data communications system. Many owners of expensive computers such as IBM, TANDY, APPLE, KAYPRO, ATARI, etc., are now buying the low cost C-64 and dedicating it to their operating position. They simply cannot find software for their machine that even approaches the power and user friendliness of the PK-64. Plus, think of the convenience of having only one controller and keyboard to go from one mode to another without having to redo cabling!

The PK-64 is so complete that all you need to do is wire up a microphone connector to the end of a cable (provided) and you are ready to go. There is no need to track down special terminal software, cabling or even a power supply. It all comes with the PK-64. So do not be the last on your block to own the most exciting new product in years. See the PK-64 at your favorite dealer or write for our specification sheet now.

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